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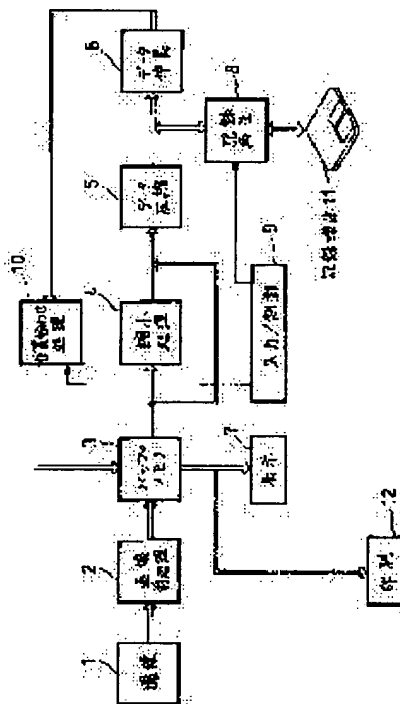
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(54) IMAGE RECORDING AND REPRODUCING DEVICE



(57)Abstract:

PROBLEM TO BE SOLVED: To attain simple image synthesis in a camera unit in the image recording and reproducing device such as an electronic still camera.

SOLUTION: In an electronic still camera, a picked-up image by an image pickup element 1 is used for a main image and an image obtained by reducing the picked-up image at a predetermined magnification by a reduction processing section 4 is used for a sum image and the images are compressed according to the algorithm such as the JPEG(joint picture expert group) at a data compression section 5 and recorded in a recording medium 11. In this case, in response to the operation of an entry/control section 9, an optional main image is called on a buffer memory 3 and an optional sub image is called on the main image from the recording medium 11 and a positioning processing section 10 synthesizes both the images based on a prescribed insertion position. Thus, the sub image used for image retrieval is used to generate easily a synthesis image and the simple image synthesis by the camera single body is attained.

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

10 [Claim(s)]

[Claim 1] The image recording regenerative apparatus recorded on the 2nd record section of the aforementioned record medium by making into subimage data the data of the picture reduced for the scale factor beforehand defined for reference of the main picture while recording the data of the picture picturized with the image pck-up means characterized by providing the following on the 1st record section of a record medium as main image data. Alter operation means. A picture composition means to output the synthetic image data which answered the alter operation to the aforementioned alter operation means, and compounded arbitrary subpictures to the arbitrary positions of the arbitrary main pictures to a display-output means.

20 [Claim 2] The image recording regenerative apparatus according to claim 1 characterized by the ability to make the aforementioned synthetic image data the main image data and subimage data, and record it.

[Claim 3] Both the main image data and subimage data by which composition should be carried out [aforementioned] are an image recording regenerative apparatus according to claim 1 or 2 characterized by being data reproduced from the aforementioned record medium.

25 [Claim 4] The subpicture by which the main picture by which composition should be carried out [aforementioned] is a card picture, and composition should be carried out [aforementioned] is an image recording regenerative apparatus according to claim 1 to 3 characterized by being a portrait image.

DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

35 [The technical field to which invention belongs] this invention relates to the image recording regenerative apparatus which also creates the data of the reduction picture for reference called especially an index picture, and recorded the data of the picturized static image about the image recording regenerative apparatus which is recorded on a record medium, and which is suitably carried out as the so-called electronic-formula still camera.

[0002]

40 [Description of the Prior Art] progress of a recent-years and image pck-up element, a record medium, etc. - following -- the quality of image of the aforementioned electronic-formula still camera -- large -- improving -- **** -- a television receiver etc. -- connecting -- immediately -- and this electronic-formula still camera that can see an image pck-up picture easily has spread quickly Moreover, the need of the electronic-formula still camera which can incorporate an image pck-up picture easily is increasing to this personal computer also by the large elongation of the quantity sold of a personal computer.

45 [0003]

[Problem(s) to be Solved by the Invention] However, the electronic-formula still camera from the former only records the data of the picture picturized with the image pck-up element on a magnetic-recording medium, memory card, etc., and insertion composition of two or more pictures etc. is performed by connecting with the complicated edit equipment constituted by the aforementioned personal computer etc. by carrying the picture edit software of exclusive use, as shown by JP,7-298191,A, JP,5-114026,A, etc. Therefore, since composition becomes large-scale, even if it does not connect with such complicated edit equipment, it is requested that insertion composition of a picture is performed simply.

[0004] On the other hand, compounding and displaying many pictures is shown by JP,7-143426,A in the electronic-formula still camera. In this advanced technology, while recording the data of an image pck-up picture on a predetermined record section as main image data first, the data of the picture which reduced the image pck-up picture for the predetermined scale factor are recorded on the predetermined record section as subimage data, subimage data is compounded for reference of the picture considered as a request, and a list display is performed. However, there is a problem that a picture cannot be inserted in in the main picture, also in such composition.

[0005] The purpose of this invention is offering the image recording regenerative apparatus which can insert in the main picture easily, even if it does not connect with complicated edit equipment.

[0006]

[Means for Solving the Problem] While recording the image recording regenerative apparatus concerning invention of a claim 1 on the 1st record section of a record medium as main image data, the data of the picture picturized with the image pck-up means In the image recording regenerative apparatus recorded on the 2nd record section of the aforementioned record medium by making into subimage data the data of the picture reduced for the scale factor beforehand defined for reference of the main picture It is characterized by including an alter operation means and a picture composition means to output the synthetic image data which answered the alter operation to the aforementioned alter operation means, and compounded arbitrary subpictures to the arbitrary positions of the arbitrary main pictures to a display-output means.

[0007] Although it is the scale factor defined beforehand in the picture picturized the arbitrary pictures which were already picturized and were recorded on the record medium, or now according to the above-mentioned composition The subimage data obtained without needing a complicated image processing is utilized effectively. a picture composition means A picture is compounded by simple technique, such as performing read-out of subimage data to the arbitrary positions of the main picture specified by the alter operation means, for example at the time of read-out of the main image data of the address corresponding to the arbitrary position. Synthetic image data is outputted to display-output meanses, such as a liquid crystal panel of one, and a video printer of another object.

[0008] Therefore, it is compoundable by inserting in the main picture with low cost composition easily with an image recording regenerative-apparatus simple substance.

[0009] Moreover, the image recording regenerative apparatus concerning invention of a claim 2 is characterized by the ability to make the aforementioned synthetic image data the main image data and subimage data, and record it.

[0010] According to the above-mentioned composition, once, after having picturized other pictures, even if it is, it becomes unnecessary to be able to read the image data compounded before from a record medium, to be able to output to a display-output means, and to perform picture composition for whenever [of a display with the aforementioned liquid crystal panel or the printout in a video printer / every], and operability can be improved.

[0011] With the image recording regenerative apparatus concerning invention of a claim 3, both the main image data and subimage data by which composition should be carried out [aforementioned] are characterized by being data reproduced from the aforementioned record medium further again.

[0012] According to the above-mentioned composition, it can compound, even if it is not a picture under present image pck-up, and recombination of a synthetic picture etc. can be performed easily.

[0013] Moreover, in the image recording regenerative apparatus concerning invention of a claim 4, the main picture by which composition should be carried out [aforementioned] is a card picture, and it is characterized by the subpicture by which composition should be carried out [aforementioned] being a portrait image.

[0014] According to the above-mentioned composition, the card of the photograph of his face which was sticking and creating the seal entering a person photograph can be easily created now.

[0015]

[Embodiments of the Invention] It will be as follows if one gestalt of operation of this invention is explained based on drawing 1 - drawing 3 .

[0016] Drawing 1 is the block diagram showing the electric composition of the electronic-formula still camera which is the image recording regenerative apparatus of one gestalt of operation of this invention. Image formation of the photographic subject image is carried out to the image pck-up element 1 realized by CCD (charge-coupled device) etc. by the optical system which is not illustrated, photo electric translation of the photographic subject image is carried out by this image pck-up element 1, and it is inputted into the picture pretreatment section 2 as a picture signal. After the picture pretreatment section 2 carries out analog-to-digital conversion of the inputted picture signal and performs signal processing, such as white balance adjustment and a gamma correction, to the obtained image data, it is outputted to buffer memory 3.

[0017] Buffer memory 3 is work memory which carries out the primary storage of the image data, and is used for signal processing. The aforementioned image data memorized by this buffer memory 3 is outputted to the reduction processing section 4 and the data compression section 5 while it is displayed by the display 7 realized with a liquid crystal display element etc. The reduction processing section 4 changes the number of samplings of the digital aforementioned image data, compresses image data, and outputs it to the data compression section 5 as subimage data.

[0018] The data compression section 5 makes the image data by which the direct input was carried out from the aforementioned buffer memory 3 the main image data, carries out compression coding with the aforementioned subimage data using algorithms, such as for example, a JPEG (JointPicture Expert Group) method, adds header information to each, and outputs it to the data extension section 6 and the record reproduction section 8.

[0019] The record reproduction section 8 records the main image data and the subimage data which were inputted, respectively on the data storage area for subpictures which is the data storage area for the main pictures and the 2nd record section which are the record media 11, for example, the 1st record section, such as magneto-optic-recording media, such as the so-called mini disc. As the record reproduction section 8 answers the operation to an input / control section 9 and mentions later the main image data and/or the subimage data which were recorded in this way again, it reads them alternatively, and it is outputted to the aforementioned data extension section 6.

[0020] After the data extension section 6 demounts the aforementioned header information to the main image data and/or the subimage data which were inputted, it carries out extension coding using algorithms of extension, such as the aforementioned JPEG method, and is outputted to buffer memory 3 through the alignment processing section 10. In this way, the picture considered as a request among the pictures which the picture picturized with the image pck-up element 1 was recorded on the record medium 11, and were recorded on the record medium 11 is read, and the printout in the display by the display 7 and the printer 12 of another object becomes possible.

[0021] In the electronic-formula still camera constituted as mentioned above, at the time of index image display, the alter operation to an input / control section 9 is answered, and the record reproduction section 8

calls the aforementioned subimage data to a target one by one from a record medium 11. By buffer memory 3, the list of subpictures is created by this and the display and printout in a display 7 and a printer 12 become possible by it. With reference to this index picture, a user can choose promptly the arbitrary main pictures considered as a request, can call as mentioned above, and can perform display and printing.

[0022] Moreover, at the time of picture composition, the alter operation to an input / control section 9 is answered, and the record reproduction section 8 reproduces the corresponding main image data and corresponding subimage data, respectively, and outputs them to the alignment processing section 10 through the data extension section 6. While the alignment processing section 10 makes the main image data store in buffer memory 3, it answers the operation to aforementioned input / control section 9, and is made to store in the storage region of the address corresponding to the position in which buffer memory 3 should insert subimage data. In this way, the content of a store of buffer memory 3 serves as synthetic image data by which the subpicture was inserted in the predetermined position of the main picture. Therefore, in a display 7 and a printer 12, a display and printing of the aforementioned synthetic picture also become possible.

[0023] Drawing 2 is drawing showing an example of the synthetic picture P0 compounded as mentioned above. This synthetic picture P0 is made into the card picture containing a photograph of his face in this example. Therefore, the subpicture P2 which the main picture P1 is the usual card picture which indicated the company name, affiliation department and section, his name, etc., and is inserted in is a portrait image. Both these main pictures P1 and the subpicture P2 may be pictures already recorded on the record medium 11, and may be a picture by which either is picturized with the image pck-up element 1, and is not recorded on a record medium 11. Moreover, the synthetic picture created in this way may be recorded on a record medium 11 as the main picture and a subpicture.

[0024] Drawing 3 is a flow chart for explaining the above picture composition operation in detail. The alter operation to an input / control section 9 is answered, first, at Step s1, the main image data is displayed, and subimage data is inserted in and displayed by Step s2. It inserts in at Step s3, it is judged whether a setup of a position is good, and it is judged whether when a setup of an insertion position was not good, in Step s4, alter operation to aforementioned input / control section 9 was performed further, when that is not right, it returns to the aforementioned step s3, it comes out so, and at a certain time, i.e., when alignment of an insertion picture is performed, it moves to Step s5.

[0025] At Step s5, it is judged whether the key operated in aforementioned input / control section 9 is which key of "***", "***", "<-" , or "->." When it is the "***" key, it sets to Step s6. The display criteria of a subpicture, For example, when it is the "***" key similarly, in Step s7, it is moved to the bottom, the position of upper left **** is moved to the bottom on the main picture, when it is the "<-" key, in Step s8, it is moved to left-hand side, and when it is the "->" key, in Step s9, it is moved to right-hand side. At Step s10, it is judged whether the subpicture moved in the aforementioned steps s6-s9 is within the limit [of the main picture]. When it moves to the aforementioned steps s1 and s2, and the display of a synthetic picture is performed, when it is within the limit [main picture], and overflowing the aforementioned main picture frame, after undoing of move processing is performed in Step s11, namely, processing is repealed, it moves to the aforementioned step s1.

[0026] In this way, if a subpicture is inserted in in the position on the main picture considered as a request of a user, it will move from the aforementioned step s3 to s12, synthetic image data will be created, and operation will be ended. Other processings of printing, record, etc. are performed in next.

[0027] Thus, picture composition can be carried out by the simple composition of only this electronic-formula still camera simple substance, without performing complicated expanding-and-contracting processing, since these arbitrary subimage data is inserted in the arbitrary main image data, synthetic image data is created and the output to printing, a display, etc. is enabled with the electronic-formula still camera

according to this invention using the subimage data used for the list display for picture reference.

[0028] Moreover, for example like a card picture, since it is recordable on a record medium 11, even if synthetic image data is that what is necessary is just to call every after having picturized other pictures whenever it is needed, it does not need to perform picture composition again and can improve operability.

5 Both the main image data and subimage data can be used as the data reproduced from the record medium 11, for example, when it is the aforementioned card picture, they can rearrange the synthetic picture of changing a subpicture or changing the gestalt of the main picture easily further again corresponding to each of official business and private use.

10 [0029] In addition, this invention can be carried out suitable for the video tape recorder which can obtain not only the still camera of an electronic formula but a clear still picture.

[0030]

15 [Effect of the Invention] The image recording regenerative apparatus concerning invention of a claim 1 outputs the synthetic image data which compounded arbitrary subpictures to the arbitrary positions of the arbitrary main pictures in the image recording regenerative apparatus recorded on the record medium as subimage data which reduced the data of an image pck-up picture for the scale factor beforehand determined as the main image data as mentioned above.

20 [0031] So, without needing a complicated image processing, although it is the scale factor defined beforehand, the subimage data obtained can be utilized effectively and it can compound by inserting in the main picture by low cost composition easily with an image recording regenerative-apparatus simple substance.

[0032] Moreover, as mentioned above, the image recording regenerative apparatus concerning invention of a claim 2 can make the aforementioned synthetic image data the main image data and subimage data, and can record it.

25 [0033] So, once, after having picturized other pictures, even if it is, it becomes unnecessary to be able to read the image data compounded before from a record medium, to be able to output to a display-output means, and to perform picture composition for whenever [of a display with the aforementioned liquid crystal panel, or the printout in a video printer / every], and operability can be improved.

30 [0034] The image recording regenerative apparatus concerning invention of a claim 3 uses the main image data and the subimage data which should be compounded as the data reproduced [both] from the aforementioned record medium as mentioned above further again.

[0035] So, it can compound, even if it is not a picture under present image pck-up, and recombination of a synthetic picture etc. can be performed easily.

[0036] Moreover, as mentioned above, the image recording regenerative apparatus concerning invention of a claim 4 makes the main picture a card picture, and uses a subpicture as a portrait image.

35 [0037] So, the card of entering [which was sticking and creating the seal] a person photograph can be easily created now.

40 TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the image recording regenerative apparatus which also creates the data of the reduction picture for reference called especially an index picture, and recorded the data of the picturized static image about the image recording regenerative apparatus which is recorded on a record medium, and which is suitably carried out as the so-called
45 electronic-formula still camera.

PRIOR ART

5 [Description of the Prior Art] progress of a recent-years and image pck-up element, a record medium, etc. -
- following -- the quality of image of the aforementioned electronic-formula still camera -- large --
improving -- **** -- a television receiver etc. -- connecting -- immediately -- and this electronic-formula
still camera that can see an image pck-up picture easily has spread quickly Moreover, the need of the
electronic-formula still camera which can incorporate an image pck-up picture easily is increasing to this
10 personal computer also by the large elongation of the quantity sold of a personal computer.

EFFECT OF THE INVENTION

15 [Effect of the Invention] The image recording regenerative apparatus concerning invention of a claim 1
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TECHNICAL PROBLEM

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10 [0005] The purpose of this invention is offering the image recording regenerative apparatus which can insert in the main picture easily, even if it does not connect with complicated edit equipment.

15 MEANS

[Means for Solving the Problem] While recording the image recording regenerative apparatus concerning invention of a claim 1 on the 1st record section of a record medium as main image data, the data of the picture picturized with the image pck-up means In the image recording regenerative apparatus recorded on the 2nd record section of the aforementioned record medium by making into subimage data the data of the picture reduced for the scale factor beforehand defined for reference of the main picture It is characterized by including an alter operation means and a picture composition means to output the synthetic image data which answered the alter operation to the aforementioned alter operation means, and compounded arbitrary subpictures to the arbitrary positions of the arbitrary main pictures to a display-output means.

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30 [0008] Therefore, it is compoundable by inserting in the main picture with low cost composition easily with an image recording regenerative-apparatus simple substance.

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[Embodiments of the Invention] It will be as follows if one gestalt of operation of this invention is explained based on drawing 1 - drawing 3 .

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[0017] Buffer memory 3 is work memory which carries out the primary storage of the image data, and is used for signal processing. The aforementioned image data memorized by this buffer memory 3 is outputted to the reduction processing section 4 and the data compression section 5 while it is displayed by the display 7 realized with a liquid crystal display element etc. The reduction processing section 4 changes the number of samplings of the digital aforementioned image data, compresses image data, and outputs it to the data compression section 5 as subimage data.

[0018] The data compression section 5 makes the image data by which the direct input was carried out from the aforementioned buffer memory 3 the main image data, carries out compression coding with the aforementioned subimage data using algorithms, such as for example, a JPEG (JointPicture Expert Group) method, adds header information to each, and outputs it to the data extension section 6 and the record reproduction section 8.

[0019] The record reproduction section 8 records the main image data and the subimage data which were inputted, respectively on the data storage area for subpictures which is the data storage area for the main pictures and the 2nd record section which are the record media 11, for example, the 1st record section, such as magneto-optic-recording media, such as the so-called mini disc. As the record reproduction section 8 answers the operation to an input / control section 9 and mentions later the main image data and/or the subimage data which were recorded in this way again, it reads them alternatively, and it is outputted to the aforementioned data extension section 6.

[0020] After the data extension section 6 demounts the aforementioned header information to the main image data and/or the subimage data which were inputted, it carries out extension coding using algorithms of extension, such as the aforementioned JPEG method, and is outputted to buffer memory 3 through the alignment processing section 10. In this way, the picture considered as a request among the pictures which the picture picturized with the image pck-up element 1 was recorded on the record medium 11, and were recorded on the record medium 11 is read, and the printout in the display by the display 7 and the printer 12 of another object becomes possible.

[0021] In the electronic-formula still camera constituted as mentioned above, at the time of index image display, the alter operation to an input / control section 9 is answered, and the record reproduction section 8

calls the aforementioned subimage data to a target one by one from a record medium 11. By buffer memory 3, the list of subpictures is created by this and the display and printout in a display 7 and a printer 12 become possible by it. With reference to this index picture, a user can choose promptly the arbitrary main pictures considered as a request, can call as mentioned above, and can perform display and printing.

[0022] Moreover, at the time of picture composition, the alter operation to an input / control section 9 is answered, and the record reproduction section 8 reproduces the corresponding main image data and corresponding subimage data, respectively, and outputs them to the alignment processing section 10 through the data extension section 6. While the alignment processing section 10 makes the main image data store in buffer memory 3, it answers the operation to aforementioned input / control section 9, and is made to store in the storage region of the address corresponding to the position in which buffer memory 3 should insert subimage data. In this way, the content of a store of buffer memory 3 serves as synthetic image data by which the subpicture was inserted in the predetermined position of the main picture. Therefore, in a display 7 and a printer 12, a display and printing of the aforementioned synthetic picture also become possible.

[0023] Drawing 2 is drawing showing an example of the synthetic picture P0 compounded as mentioned above. This synthetic picture P0 is made into the card picture containing a photograph of his face in this example. Therefore, the subpicture P2 which the main picture P1 is the usual card picture which indicated the company name, affiliation department and section, his name, etc., and is inserted in is a portrait image. Both these main pictures P1 and the subpicture P2 may be pictures already recorded on the record medium 11, and may be a picture by which either is picturized with the image pck-up element 1, and is not recorded on a record medium 11. Moreover, the synthetic picture created in this way may be recorded on a record medium 11 as the main picture and a subpicture.

[0024] Drawing 3 is a flow chart for explaining the above picture composition operation in detail. The alter operation to an input / control section 9 is answered, first, at Step s1, the main image data is displayed, and subimage data is inserted in and displayed by Step s2. It inserts in at Step s3, it is judged whether a setup of a position is good, and it is judged whether when a setup of an insertion position was not good, in Step s4, alter operation to aforementioned input / control section 9 was performed further, when that is not right, it returns to the aforementioned step s3, it comes out so, and at a certain time, i.e., when alignment of an insertion picture is performed, it moves to Step s5.

[0025] At Step s5, it is judged whether the key operated in aforementioned input / control section 9 is which key of "****", "****", "<-", or "->." When it is the "****" key, it sets to Step s6. The display criteria of a subpicture, For example, when it is the "****" key similarly, in Step s7, it is moved to the bottom, the position of upper left **** is moved to the bottom on the main picture, when it is the "<-" key, in Step s8, it is moved to left-hand side, and when it is the "->" key, in Step s9, it is moved to right-hand side. At Step s10, it is judged whether the subpicture moved in the aforementioned steps s6-s9 is within the limit [of the main picture]. When it moves to the aforementioned steps s1 and s2, and the display of a synthetic picture is performed, when it is within the limit [main picture], and overflowing the aforementioned main picture frame, after undoing of move processing is performed in Step s11, namely, processing is repealed, it moves to the aforementioned step s1.

[0026] In this way, if a subpicture is inserted in in the position on the main picture considered as a request of a user, it will move from the aforementioned step s3 to s12, synthetic image data will be created, and operation will be ended. Other processings of printing, record, etc. are performed in next.

[0027] Thus, picture composition can be carried out by the simple composition of only this electronic-formula still camera simple substance, without performing complicated expanding-and-contracting processing, since these arbitrary subimage data is inserted in the arbitrary main image data, synthetic image data is created and the output to printing, a display, etc. is enabled with the electronic-formula still camera

according to this invention using the subimage data used for the list display for picture reference.

[0028] Moreover, for example like a card picture, since it is recordable on a record medium 11, even if synthetic image data is that what is necessary is just to call every after having picturized other pictures whenever it is needed, it does not need to perform picture composition again and can improve operability.

- 5 Both the main image data and subimage data can be used as the data reproduced from the record medium 11, for example, when it is the aforementioned card picture, they can rearrange the synthetic picture of changing a subpicture or changing the gestalt of the main picture easily further again corresponding to each of official business and private use.

- 10 [0029] In addition, this invention can be carried out suitable for the video tape recorder which can obtain not only the still camera of an electronic formula but a clear still picture.

DESCRIPTION OF DRAWINGS

- 15 [Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the electric composition of the electronic-formula still camera which is the image recording regenerative apparatus of one gestalt of operation of this invention.

[Drawing 2] It is drawing for explaining an example of a synthetic picture.

[Drawing 3] It is a flow chart for explaining the creation procedure of a synthetic picture in detail.

- 20 [Description of Notations]

1 Image Pck-up Element

2 Picture Pretreatment Section

3 Buffer Memory (Picture Composition Means)

4 Reduction Processing Section

- 25 5 Data Compression Section

6 Data Extension Section

7 Display

8 Record Reproduction Section

9 Input/Control Section (Alter Operation Means)

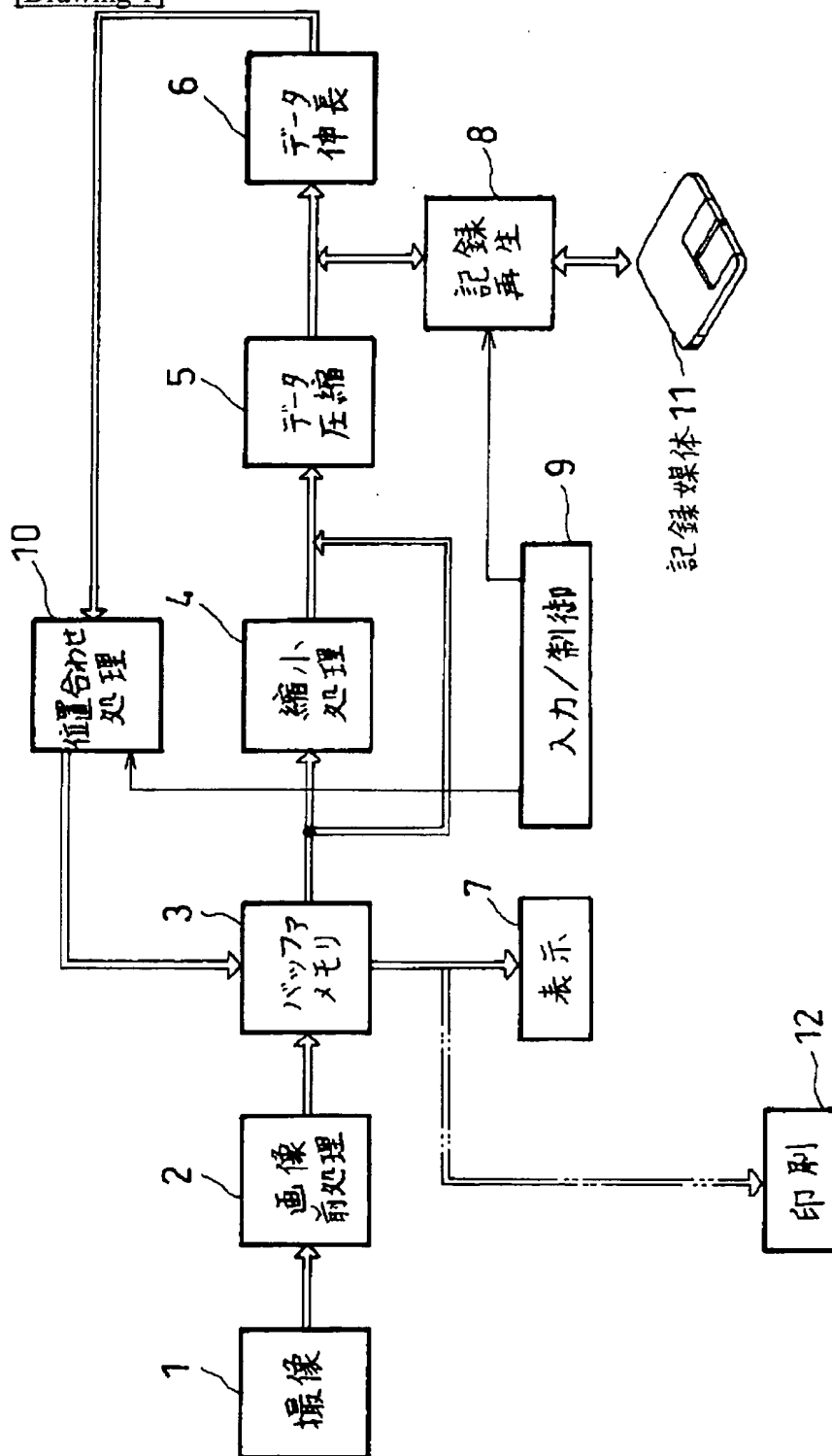
- 30 10 Alignment Processing Section (Picture Composition Means)

11 Record Medium

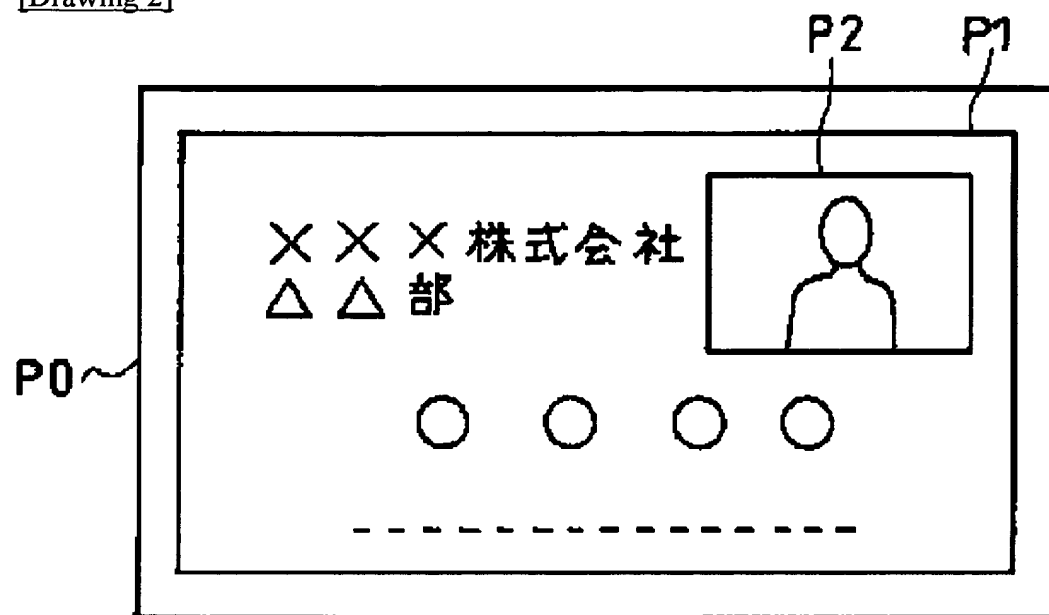
12 Printer

DRAWINGS

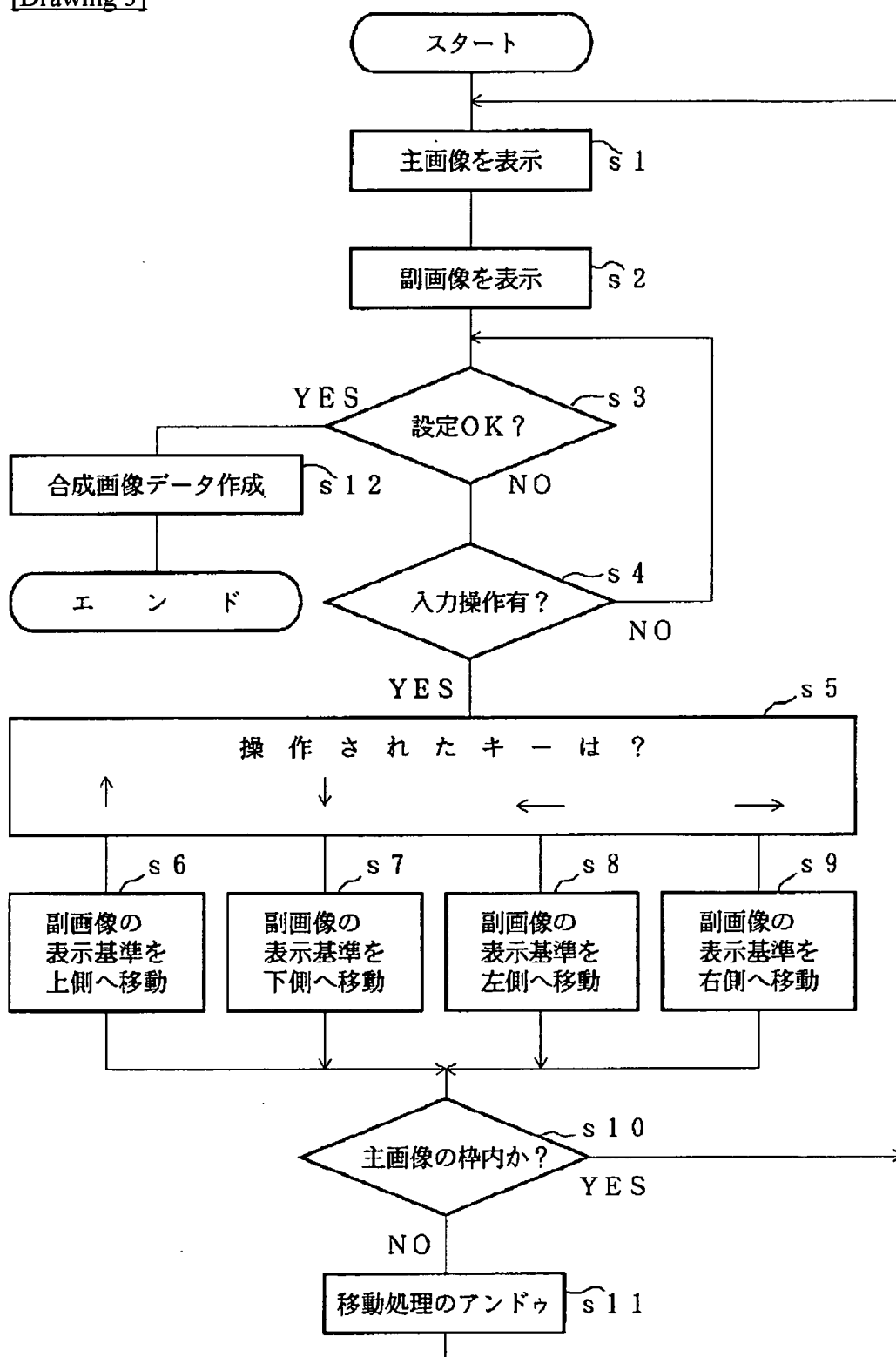
5 [Drawing 1]



[Drawing 2]



[Drawing 3]



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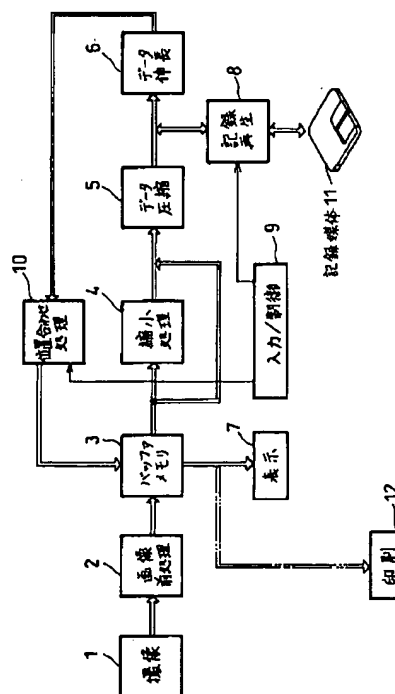
(74)代理人 弁理士 原 謙三

(54)【発明の名称】 画像記録再生装置

(57)【要約】

【課題】 電子式スチルカメラ等の画像記録再生装置において、カメラ単体での簡易な画像合成を可能とする。

【解決手段】 撮像素子1での撮像画像を主画像とし、またこの撮像画像を縮小処理部4において予め定める倍率で縮小した画像を副画像として、データ圧縮部5においてJ P E Gなどのアルゴリズムに従って圧縮し、記録媒体11へ記録するようにした電子式スチルカメラにおいて、入力/制御部9への操作に応答して、任意の主画像をまずバッファメモリ3上へ呼出し、その主画像上で、任意の副画像をまた記録媒体11から呼出して、位置合わせ処理部10が所定の嵌め込み位置へ合成させる。したがって、画像検索用に使用される副画像を用いて、容易に合成画像を作成することができ、カメラ単体での簡易な画像合成が可能となる。



【特許請求の範囲】

【請求項1】撮像手段で撮像された画像のデータを、主画像データとして記録媒体の第1の記録領域に記録するとともに、主画像の検索のために予め定める倍率で縮小された画像のデータを副画像データとして前記記録媒体の第2の記録領域に記録するようにした画像記録再生装置において、

入力操作手段と、

前記入力操作手段への入力操作に応答し、任意の主画像の任意の位置へ任意の副画像を合成した合成画像データを表示出力手段へ出力する画像合成手段とを含むことを特徴とする画像記録再生装置。

【請求項2】前記合成画像データを主画像データおよび副画像データとして記録可能であることを特徴とする請求項1記載の画像記録再生装置。

【請求項3】前記合成されるべき主画像データおよび副画像データは、ともに前記記録媒体から再生されたデータであることを特徴とする請求項1または2記載の画像記録再生装置。

【請求項4】前記合成されるべき主画像は名刺画像であり、前記合成されるべき副画像は人物画像であることを特徴とする請求項1～3のいずれかに記載の画像記録再生装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、撮像した静止画像のデータを記録媒体に記録する、いわゆる電子式スチルカメラとして好適に実施される画像記録再生装置に関し、特にインデックス画像と称される、検索のための縮小画像のデータも作成して記録しておくようにした画像記録再生装置に関する。

【0002】

【従来の技術】近年、撮像素子および記録媒体等の進歩に伴って、前記電子式スチルカメラの画質が大幅に向上しており、テレビジョン受像機などに接続して、直ちに、かつ容易に撮像画像を見ることができるとする該電子式スチルカメラが、急速に普及している。また、パーソナルコンピュータの販売数量の大幅な伸びによっても、該パーソナルコンピュータに撮像画像を容易に取込むことができる電子式スチルカメラの需要が高まっている。

【0003】

【発明が解決しようとする課題】しかしながら、従来からの電子式スチルカメラは、撮像素子で撮像された画像のデータを単に磁気記録媒体やメモ리카ードなどに記録するだけであり、複数の画像の嵌め込み合成などは、たとえば特開平7-298191号公報および特開平5-114026号公報などで示されるように、前記パーソナルコンピュータなどに専用の画像編集ソフトを搭載して構成される複雑な編集装置に接続することによって行われている。したがって、構成が大がかりになるので、

このような複雑な編集装置に接続しなくても、簡単に画像の嵌め込み合成を行うことが要望されている。

【0004】一方、電子式スチルカメラにおいて、多数の画像を合成して表示することは、たとえば特開平7-143426号公報で示されている。この先行技術では、撮像画像のデータを、まず主画像データとして所定の記録領域に記録するとともに、その撮像画像を所定倍率で縮小した画像のデータを、副画像データとして所定の記録領域に記録しておき、所望とする画像の検索のために、副画像データを合成して一覧表示を行う。しかしながら、このような構成においても、主画像には画像の嵌め込みを行うことができないという問題がある。

【0005】本発明の目的は、複雑な編集装置に接続しなくても、簡単に主画像に嵌め込みを行うことができる画像記録再生装置を提供することである。

【0006】

【課題を解決するための手段】請求項1の発明に係る画像記録再生装置は、撮像手段で撮像された画像のデータを、主画像データとして記録媒体の第1の記録領域に記録するとともに、主画像の検索のために予め定める倍率で縮小された画像のデータを副画像データとして前記記録媒体の第2の記録領域に記録するようにした画像記録再生装置において、入力操作手段と、前記入力操作手段への入力操作に応答し、任意の主画像の任意の位置へ任意の副画像を合成した合成画像データを表示出力手段へ出力する画像合成手段とを含むことを特徴とする。

【0007】上記の構成によれば、既に撮像されて記録媒体に記録された任意の画像または現在撮像されている画像において、予め定められた倍率ではあるけれども、複雑な画像処理を必要とすることなく得られている副画像データを有効に活用して、画像合成手段は、入力操作手段によって指定された主画像の任意の位置へ、たとえばその任意の位置に対応したアドレスの主画像データの読出時に副画像データの読出しを行うなどの簡易な手法で画像を合成し、合成画像データを一体の液晶パネルや別体のビデオプリンタなどの表示出力手段へ出力する。

【0008】したがって、画像記録再生装置単体で、容易に、かつ低コストな構成で、主画像に嵌め込み合成を行うことができる。

【0009】また、請求項2の発明に係る画像記録再生装置は、前記合成画像データを主画像データおよび副画像データとして記録可能であることを特徴とする。

【0010】上記の構成によれば、一旦、他の画像を撮像してしまった後であっても、以前に合成しておいた画像データを記録媒体から読出して表示出力手段へ出力することができ、前記液晶パネルでの表示やビデオプリンタでの印刷出力のたび毎に画像合成を行う必要がなくなり、操作性を向上することができる。

【0011】さらにまた、請求項3の発明に係る画像記録再生装置では、前記合成されるべき主画像データおよ

び副画像データは、ともに前記録媒体から再生されたデータであることを特徴とする。

【0012】上記の構成によれば、現在撮像中の画像でなくても合成を行うことができ、合成画像の組換えなどを容易に行うことができる。

【0013】また、請求項4の発明に係る画像記録再生装置では、前記合成されるべき主画像は名刺画像であり、前記合成されるべき副画像は人物画像であることを特徴とする。

【0014】上記の構成によれば、シールを貼って作成していた顔写真などの人物写真入りの名刺を、容易に作成することができるようになる。

【0015】

【発明の実施の形態】本発明の実施の一形態について、図1～図3に基づいて説明すれば、以下の通りである。

【0016】図1は、本発明の実施の一形態の画像記録再生装置である電子式スチルカメラの電気的構成を示すブロック図である。CCD（電荷結合素子）などで実現される撮像素子1には、図示しない光学系によって被写体像が結像されており、その被写体像は該撮像素子1によって光电変換されて、画像信号として画像前処理部2へ入力される。画像前処理部2は、入力された画像信号をアナログ／デジタル変換し、得られた画像データに、ホワイトバランス調整やガンマ補正等の信号処理を行った後、バッファメモリ3へ出力する。

【0017】バッファメモリ3は、画像データを一次記憶して、信号処理に使用されるワークメモリである。このバッファメモリ3に記憶されている前記画像データは、液晶表示素子などで実現される表示部7によって表示されるとともに、縮小処理部4およびデータ圧縮部5へ出力される。縮小処理部4は、デジタルの前記画像データのサンプリング数を変換するなどして画像データを圧縮し、副画像データとしてデータ圧縮部5へ出力する。

【0018】データ圧縮部5は、前記バッファメモリ3から直接入力された画像データを主画像データとし、前記副画像データとともに、たとえばJPEG（Joint Picture Expert Group）方式等のアルゴリズムを用いて圧縮符号化し、それぞれにヘッダ情報を付加して、データ伸長部6および記録再生部8へ出力する。

【0019】記録再生部8は、入力された主画像データおよび副画像データを、いわゆるミニディスク等の光磁気記録媒体などの記録媒体11の、たとえば第1の記録領域である主画像用データ記録領域および第2の記録領域である副画像用データ記録領域にそれぞれ記録する。記録再生部8はまた、このように記録された主画像データおよび／または副画像データを、入力／制御部9への操作にตอบสนองして、後述するようにして選択的に読出し、前記データ伸長部6へ出力する。

【0020】データ伸長部6は、入力された主画像データおよび／または副画像データに対して、前記ヘッダ情報を取外した後、前記JPEG方式等の伸長のアルゴリズムを用いて伸長符号化し、位置合わせ処理部10を介してバッファメモリ3へ出力する。こうして、撮像素子1で撮像された画像が記録媒体11へ記録され、また記録媒体11に記録された画像のうち、所望とする画像が読出されて、表示部7での表示や、別体の印刷装置12での印刷出力が可能となる。

【0021】上述のように構成された電子式スチルカメラにおいて、インデックス画像表示時には、入力／制御部9への入力操作にตอบสนองして、記録再生部8は、記録媒体11から前記副画像データを順次的に呼出してゆく。これによって、バッファメモリ3では副画像の一覧が作成され、表示部7および印刷装置12での表示および印刷出力が可能となる。このインデックス画像を参照して、使用者は所望とする任意の主画像の選択を速やかに行い、前述のようにして呼出して表示および印刷を行うことができる。

【0022】また、画像合成時には、入力／制御部9への入力操作にตอบสนองして、記録再生部8は対応する主画像データおよび副画像データをそれぞれ再生し、データ伸長部6を介して位置合わせ処理部10へ出力する。位置合わせ処理部10は、主画像データをバッファメモリ3に格納させるとともに、前記入力／制御部9への操作にตอบสนองして、副画像データをバッファメモリ3の嵌め込むべき位置に対応したアドレスの記憶領域に格納させる。こうしてバッファメモリ3のストア内容は、主画像の所定位置に副画像が嵌め込まれた合成画像データとなる。したがって、表示部7および印刷装置12において、前記合成画像の表示および印刷も可能となる。

【0023】図2は、上述のようにして合成された合成画像P0の一例を示す図である。この例では、該合成画像P0は、顔写真入りの名刺画像としている。したがって、主画像P1は、会社名や所属部課および本人の氏名などを記載した通常の名刺画像であり、嵌め込まれる副画像P2は、人物画像である。これら主画像P1および副画像P2は、ともに記録媒体11に既に記録されている画像であってもよく、またいずれか一方が撮像素子1で撮像されて記録媒体11には記録されていない画像であってもよい。また、こうして作成された合成画像は、主画像および副画像として記録媒体11に記録されてもよい。

【0024】図3は、上述のような画像合成動作を詳細に説明するためのフローチャートである。入力／制御部9への入力操作にตอบสนองして、まずステップs1では主画像データが表示され、ステップs2で副画像データが嵌め込まれて表示される。ステップs3では嵌め込み位置の設定が良いか否かが判断され、嵌め込み位置の設定が良くないときには、さらにステップs4において前記入

力/制御部9への入力操作が行われたか否かが判断され、そうでないときには前記ステップs3に戻り、そうであるときには、すなわち嵌め込み画像の位置合わせが行われるときにはステップs5に移る。

【0025】ステップs5では、前記入力/制御部9において操作されたキーは「↑」「↓」「←」または「→」のいずれのキーであるかが判断され、「↑」キーであるときにはステップs6において副画像の表示基準、たとえば左上隅点の位置が主画像上で上側へ移動され、同様に「↓」キーであるときにはステップs7において下側へ移動され、「←」キーであるときにはステップs8において左側へ移動され、「→」キーであるときにはステップs9において右側へ移動される。ステップs10では、前記ステップs6～s9において移動された副画像が主画像の枠内であるか否かが判断され、主画像枠内であるときには前記ステップs1、s2に移って合成画像の表示が行われ、前記主画像枠からはみ出すときにはステップs11において移動処理のアンドゥが行われ、すなわち処理が無効とされた後、前記ステップs1へ移る。

【0026】こうして使用者の所望とする主画像上の位置へ副画像が嵌め込まれると、前記ステップs3からs12へ移って、合成画像データが作成されて動作を終了する。この後には、印刷や記録などの他の処理が行われる。

【0027】このように本発明に従う電子式スチルカメラでは、画像検索のための一覧表示に使用される副画像データを用いて、任意の主画像データに任意の該副画像データを嵌め込んで合成画像データを作成し、印刷や表示などへの出力を可能とするので、煩雑な拡張処理を行うことなく、該電子式スチルカメラ単体のみの簡易な構成で画像合成を行うことができる。

【0028】また、合成画像データは、記録媒体11に記録可能であるので、たとえば名刺画像などのように、必要となるたび毎に呼出せばよく、他の画像を撮像してしまった後であっても、画像合成を再度行う必要はなく、操作性を向上することができる。さらにまた、主画像データおよび副画像データはともに記録媒体11から再生されたデータとすることができ、たとえば前記名刺画像の場合には、公用および私用のそれぞれに対応し

て、副画像を変更したり、あるいは主画像の形態を変更したりするなどの合成画像の組換えを容易に行うことができる。

【0029】なお、本発明は電子式のスチルカメラに限らず、明瞭な静止画を得ることができるビデオテープレコーダなどにも好適に実施することができる。

【0030】

【発明の効果】請求項1の発明に係る画像記録再生装置は、以上のように、撮像画像のデータを、主画像データと、予め定める倍率で縮小した副画像データとして記録

媒体に記録しておくようにした画像記録再生装置において、任意の主画像の任意の位置へ任意の副画像を合成した合成画像データを出力する。

【0031】それゆえ、予め定められた倍率ではあるけれども、複雑な画像処理を必要とすることなく、得られている副画像データを有効に活用して、画像記録再生装置単体で、容易に、かつ低コストな構成で、主画像に嵌め込み合成を行うことができる。

【0032】また、請求項2の発明に係る画像記録再生装置は、以上のように、前記合成画像データを主画像データおよび副画像データとして記録可能である。

【0033】それゆえ、一旦、他の画像を撮像してしまった後であっても、以前に合成しておいた画像データを記録媒体から読出して表示出力手段へ出力することができ、前記液晶パネルでの表示やビデオプリンタでの印刷出力のたび毎に画像合成を行う必要がなくなり、操作性を向上することができる。

【0034】さらにまた、請求項3の発明に係る画像記録再生装置は、以上のように、合成されるべき主画像データおよび副画像データを、ともに前記記録媒体から再生されたデータとする。

【0035】それゆえ、現在撮像中の画像でなくても合成を行うことができ、合成画像の組換えなどを容易に行うことができる。

【0036】また、請求項4の発明に係る画像記録再生装置は、以上のように、主画像を名刺画像とし、副画像を人物画像とする。

【0037】それゆえ、シールを貼って作成していた人物写真入りの名刺を、容易に作成することができるようになる。

【図面の簡単な説明】

【図1】本発明の実施の一形態の画像記録再生装置である電子式スチルカメラの電氣的構成を示すブロック図である。

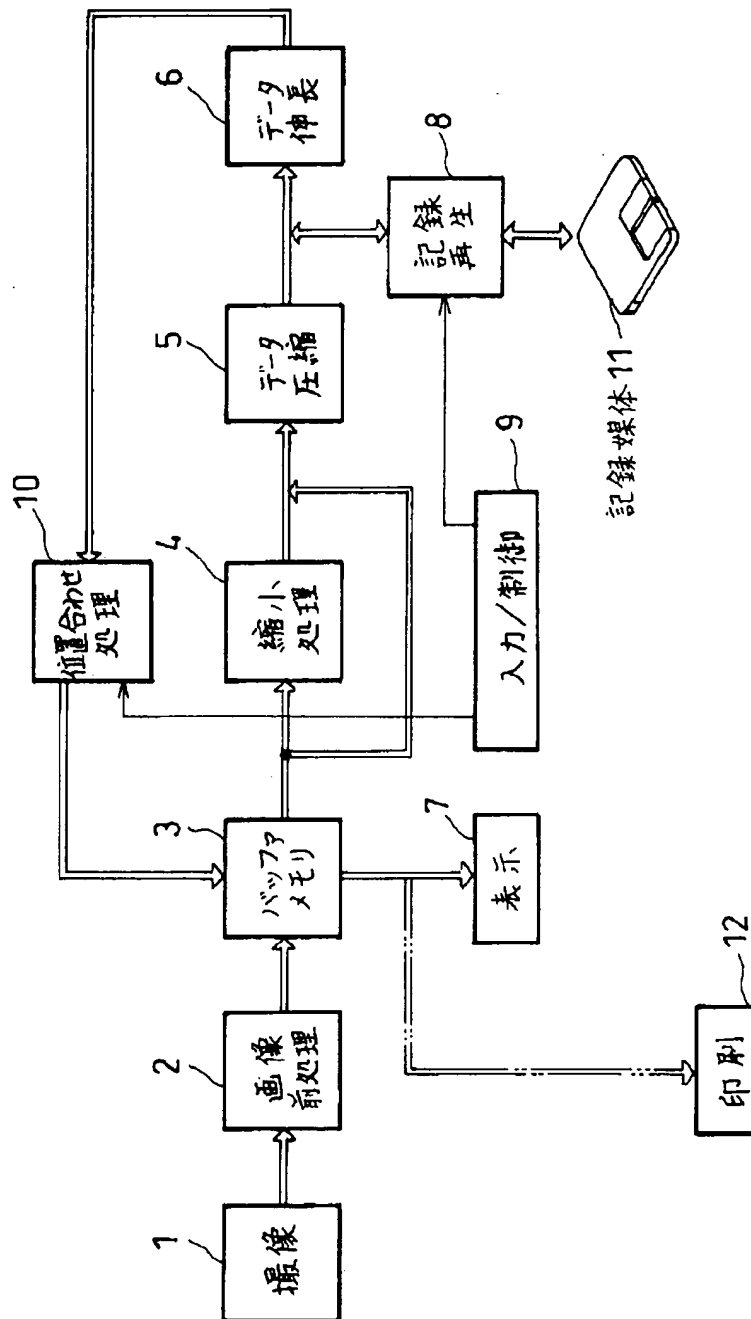
【図2】合成画像の一例を説明するための図である。

【図3】合成画像の作成手順を詳細に説明するためのフローチャートである。

【符号の説明】

- 1 撮像素子
- 2 画像前処理部
- 3 バッファメモリ（画像合成手段）
- 4 縮小処理部
- 5 データ圧縮部
- 6 データ伸長部
- 7 表示部
- 8 記録再生部
- 9 入力/制御部（入力操作手段）
- 10 位置合わせ処理部（画像合成手段）
- 11 記録媒体
- 12 印刷装置

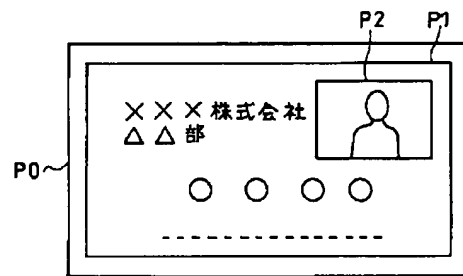
【図1】



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【図2】



【図3】

